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JPRS: 18,907

ABSTRACTS FROM EAST EUROPEAN
SCIENTIFIC AND TECHNICAL JOURNALS

No. 149

- Physics and Mathematics Series -

This report consists of abstracts of articles from the
East European scientific and technical journal listed in
the table of contents below.

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EAST GERMANY

KONONENSKIY, S.T., [affiliation not given].

"The Present Status of the Investigations on the Nature of Radiation Damage to Solids" (Summarizing Article).

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 49-55.

Abstract: The contemporary state of research dealing with radiation damage to solids, with special emphasis to nuclear radiation, was reviewed. Theories underlying observed damages and alterations were discussed. Details were presented of the effects on the lattice structure of crystalline solids, on changes caused in magnetic properties, and on methods for evaluating the damages caused by radiation. Twelve references, including 4 Russian and 8 Western.

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EAST GERMANY

BESSNER, G., MACKE, W., and OPITZ, G., of the Institute for Theoretical Physics at the Technical University (Institut für Theoretische Physik der Technischen Hochschule) in Dresden.

"Calculation of the Effective Cross-Section in Uranium-Water Lattice"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 55-63.

Abstract: The reactor cross-sections for the Mn-55, Co-59, Au-197, U-233, U-235, U-238, Pu-240, Rh-103, and In-115 nucleids, calculated according to Westcott, can be applied to the uranium-water lattice in the spectra investigated. Deviations were observed, however, for the Sm (3.2%), Pu-239m (-1.0%), Pu-239f (-0.8%), and Pu-241f (-0.8%). The s-factors quoted by WESTCOTT, C.H., (ORRP-680 TWOC (Can.)-7, AECL-407, 1957) for the In-115 nucleid at 40 and 80 degrees Centigrade were replaced by corrected ones. Twenty-five references, including 22 Western and 3 German.

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EAST GERMANY

ANDERS, B., HINOMANN, S., ODRICH, H., and TRAUTMANN, H., of the Central Institute for Nuclear Physics, Specialty Field: Nuclear Physics (Zentralinstitut für Kernphysik, Bereich Physik der Atomkerne) in Rossendorf, near Dresden.

"Adjustment of Two Quadrupole Lenses"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 63-65.

Abstract: To focus the emerging particle stream in the cyclotron at Rossendorf two quadrupole lenses are employed. The method used for adjusting these lenses was described. The distance between the focus and the lens system is more than 600 centimeters. By using the method described it is not necessary to know the position of the central line of the ion stream nor the magnetic axis of the lenses. Each lens is adjusted independently; thus there is no need to correct for interaction. The adjustment can be effected in very short time. Nine references, including 1 German, 2 Czechoslovakian, and 6 Western.

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EAST GERMANY

SCHLESIER, G., KOCH, H., and BUCHNER, R., of the Institute for Applied Radioactivity (Institut für Angewandte Radioaktivität) in Leipzig.

"Syntheses of Aliphatic, C¹⁴-Labeled Amines"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 65-70.

Abstract: The syntheses of β -hydroxy-n-nonylaminehydrochloride ($-1-^{14}\text{C}$), β -chloro-n-nonylaminehydrochloride ($-1-^{14}\text{C}$), and β -bromo-n-nonylaminehydrochloride ($-1-^{14}\text{C}$) were described and the critical micellar concentrations, determined by means of conductivity measurements, were given for each. Attempts to synthesize β -iodo-nonylaminehydrochloride and of α -nonylamine nitrilehydrochloride did not yield pure products. Nine references to German publications.

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EAST GERMANY

MIKULSKI, J., of the Institute for Nuclear Physics, Laboratory for Chemistry and Radiochemistry [original-language version not given] in Krakow, Poland.

"Studies on the Extraction of Metal Ions with the Aid of Radioactive Nucleids. Part 3: Extraction of Bivalent Manganese, Trivalent Iron, Bivalent Cobalt, Bivalent Copper, and Bivalent Zinc Ions With 8-Hydroxy-Quinoline-N-Oxide"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 71-72.

Abstract: The extraction process was investigated in the 0-10 pH range. Chloroform solution in 0.1 mol. concentration was used. For bivalent manganese ions the optimum yield is at 60%, for the trivalent iron and bivalent cobalt ions at 75%, and for the bivalent copper ions at 90%. Bivalent zinc ions were not capable of being extracted. The indicator method employing Mn-54, Fe-59, Co-60, Cu-64, and Zn-65 nucleids was used. Nine references, including 4 German, 1 Japanese, 1 Indian, and 3 Western.

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EAST GERMANY

HAUMANN, D., of the Central Institute for Nuclear Physics, Specialty Field: Materials of Construction and Solid Substances (Centralinstitut für Kernphysik, Bereich Werkstoffe und Festkörper) at Rossendorf, near Dresden.

"Laboratory Studies on the Reprocessing by Chlorination of Neutron-Irradiated Uranium Core Fuels. Part 2: Separation by Distillation of Gaseous Chlorination Products from Pile-Irradiated Uranium Oxide"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 73-76.

Abstract: The separation of the chlorination products by distillation at 600-700 degrees Centigrade temperature was studied mathematically and experimentally. The most significant deviation from the ideal distillation behavior in the presence of the principal component, uranium tetrachloride, was shown in the case of plutonium chloride. Two references to German publications.

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EAST GERMANY

FRANK, M., of the Institute for the Application of Radioactive Isotopes at the Technical University (Institut für Anwendung Radioaktiver Isotope der Technischen Hochschule) in Dresden.

"Thermoluminescence Dosimetry with Lithium Fluoride and Energy Dependence of Calcium Fluoride - Manganese and Lithium Fluoride Thermoluminescence Dosimeters"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 76-80.

Abstract: The lithium fluoride phosphor is suitable for dosimetry in the 0.1-1000 r. range for X-ray and gamma rays. An instrument based on this phosphor and suitable for routine determinations is described. Calculations on the energy dependence of calcium fluoride - manganese and lithium fluoride showed that while the latter is suitable for the entire spectral range, the former is suitable for the dose range above 0.2 million electron volts. These calculations were verified experimentally by using gamma-radiating nucleids. Ten references, including 5 German, 1 Russian, and 4 Western.

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EAST GERMANY

NAUMANN, D., of the Central Institute for Nuclear Physics, Specialty Field: Materials of Construction and Solids (Zentralinstitut für Kernphysik, Bereich Werkstoffe und Festkörper) in Rossendorf near Dresden.

"Ion Exchange of Plutonium on Wofatit SBW with Alcoholic Hydrochloric Acid"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 81.

Abstract: Good separation was achieved by using 60% ethyl alcohol containing hydrochloric acid in twice normal concentration. The plutonium was kept in the trivalent state with hydroxylamine hydrochloride and thus rendered immune to adsorption on the Wofatit SBW ion exchanger column. Determination of plutonium was accomplished by measuring its alpha-activity with a zinc sulfide scintillation counter. After the plutonium was eluted from the column, hexavalent uranium and trivalent iron remained on it and was subsequently eluted with 0.1 normal hydrochloric acid (aqueous solution). One reference to a Western publication.

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EAST GERMANY

BUENER, M., and SCHMIDT, L.H., of the Central Institute for Nuclear Physics, Specialty Field: Radiochemistry (Zentralinstitut für Kernphysik, Bereich Radiochemie) in Rossendorf near Dresden.

"Synthesis of Cl-36(5)-labeled pentachlorophenol"

Berlin, Kernerergie, Vol 6, No 2, Feb 1963, p. 82.

Abstract: U.S. Patent No 2,563,815, issued 21 Feb 1948 to BRUCE, E.A., covering the synthesis of Cl-36(5)-labeled pentachlorophenol, was described. The product has a specific activity of two microcuries per gram. One reference, to the U.S. Patent referred to above.

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EAST GERMANY

SCHMIDT, L.H., and BUENER, M., of the Central Institute for Nuclear Physics, Specialty Field: Radiochemistry (Zentralinstitut für Kernphysik, Bereich Radiochemie) in Rossendorf near Dresden.

"Synthesis of C-14(3)-Labeled Glycerol Tripalmitate"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 82-83.

Abstract: Esterification of C-14 labeled palmitic acid with glycerol proceeds through the intermediate formation of the acid chloride. By employing a 1:1.5-2.0 fatty acid chloride:glycerol ratio, the product was obtained at a good yield. It was recrystallized from acetone and purified by removing any free acids by chromatography using an alumina column. Two references to Western publications.

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EAST GERMANY

KAUFMANN, C., and SCHWITLMEISTER, J., [affiliation not given].

"Semiconductor Detectors from the Central Institute for Nuclear Physics in Rossendorf"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 83.

Abstract: The Central Institute for Nuclear Physics (Zentralinstitut fur Kernphysik) in Rossendorf announced the availability of surface-barrier silicon detectors in various types. They are available from the Institute at the following address: Zentralinstitut fur Kernphysik, Bereich Physik der Atomkerne, Rossendorf uber Dresden - Bad Weisser Hirsch, Postfach 19. No references.

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EAST GERMANY

KIESEWETTER, H., [affiliation not given].

"The Equidiff Conference on Differential Equations and Their Applications, Held 5-11 Sep 1962 in Prague, Czechoslovakia"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 84.

Abstract: A brief review was given of the Equidiff Conference on Differential Equations and their Applications, held 5-11 Sep 1962 in Prague. It was organized by the Czechoslovakian Association of Mathematicians and Physicists and the Czechoslovakian Academy of Sciences [original-language versions not given] on the former organization's hundredth anniversary. It is planned to issue the proceedings of the conference in a special volume. No references.

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EAST GERMANY

OERTTEL, K.-H., [affiliation not given].

"The Second National Conference on Electronics in Warsaw"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, pp. 84-85.

Abstract: A review was given of the Second National Conference on Electronics, held 13-16 Jun 1962 in Warsaw, Poland. It was organized by the Committee for Electronics and Telecommunication of the Polish Academy of Sciences [original-language version not given]. The Third Conference was scheduled for 1964. The most significant papers delivered will be published in the Polish Technical Press, such as the journal: Elektronika. No references.

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EAST GERMANY

WEITZEL, L., [affiliation not given].

"Symposium on the Technological Problems of Safeguarding against Radiation"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 85.

Abstract: A review was given of the Symposium on the Technological Problems of Safeguarding against Radiation, held 25-29 Sep 1962 in Warsaw, Poland. Delegates from Bulgaria, the German Democratic Republic, Poland, Rumania, the Soviet Union, and Hungary attended. The proceedings of the Symposium will be published in a special volume. It was decided to organize such Symposia biennially in the future. No references.

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EAST GERMANY

WAGNER, H., [affiliation not given].

"Isotope Analysis by Mass Spectrometry - by H. Birkenfeld, G. Haase, and H. Zahn"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 86.

Abstract: This article is a review of the German book entitled: Isotope Analysis by Mass Spectrometry (Massenspektrometrische Isotopenanalyse) by BIRKENFELD, H., HAASE, G., and ZAHN, H., published in 1962 by the People-Owned Enterprise German Scientific Publishers (VEB Verlag Deutscher Verlag der Wissenschaften) in Berlin. The book has 253 pages and 75 illustrations; price is DM 54.00.

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EAST GERMANY

FRATZSCHER, W., [affiliation not given].

"Technical Thermodynamics - by H. Faltin"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 88.

Abstract: This article is a review of the German book entitled: Technical Thermodynamics (Technische Wärmelehre) by FALTIN, H., published in 1961 by the Publishing House of the Academy (Academie Verlag) in Berlin. This book, the fourth, revised edition, has 587 pages and 199 illustrations, 23 tables, and 8 tabellar supplements; price is DM 23.00.

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EAST GERMANY

SCHMIDT, W., [affiliation not given].

"Isotope and Radiation Guide for Doctors - by W. Beier and E. Dörner"

Berlin, Kernenergie, Vol 6, No 2, Feb 1963, p. 88.

Abstract: This article is a review of the German book entitled: Isotope and Radiation Guide for Doctors (Isotopen- und Strahlenfibel für den Arzt) by BEIER, W., and DÖRNER, E., published in 1960 by Georg Thieme Publishers (Georg Thieme Verlag) in Leipzig. The book has 269 pages, 175 illustrations, and 46 tables; price is DM 16.90. This is the third, enlarged edition.

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